UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/717,187	11/20/2000	Vikram Joshi	50277-0378	9515

29989 7590 12/05/2003

HICKMAN PALERMO TRUONG & BECKER, LLP
1600 WILLOW STREET
SAN JOSE, CA 95125

EXAMINER	
VU, TUAN A	

ART UNIT	PAPER NUMBER
2124	10

DATE MAILED: 12/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/717,187	JOSHI ET AL.	
	Examiner	Art Unit	
	Tuan A Vu	2124	

-- The MAILING DATE of this communication app ars on th cover sheet with th correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *5,7,8*.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

1. This action is responsive to the Applicant's response filed 09/29/2003.

As indicated in Applicant's response, claims 1, 9 have been amended; and claims 17-24 added. Claims 1-24 are pending in the office action.

Claim Objections

2. Claims 18-24 are objected to because of the following informalities: the term 'computer-readable medium (first line of pertinent claims) has not been recited in the base claim and is being interpreted in the rejection as being an 'apparatus' instead. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gorshkov et al., USPN: 6,490,721 (hereinafter Gorshkov), in view of Bowman-Amuah, USPN: 6,442,748 (hereinafter Bowman) , and further in view of Khoyi et al., USPN: 5,303,379 (hereinafter Khoyi).

As per claim 1, Gorshkov discloses debugging method comprising:

preserving a memory state of a preserved portion of a first software program (e.g. *fork* -- col. 3, lines 54-60 – Note: forking a child is equivalent to preserving a parent program, or first program);

dynamically linking a second software program to the first program without de-allocating the first program from volatile memory (e.g. step *10* – Fig. 2; col. 4, lines 29-33 — Note: the linking of the child to the target user program being a copy of the parent is equivalent to linking second program to first);

executing the second program (e.g. step *12* – Fig. 2; Fig. 4), the second program when executing would cause modifications to the targeted data of the preserved portion of the first software program (e.g. steps *21, 30* -- Fig. 4 – Note: child executing a patch call affecting the preserved data in the parent code is equivalent to second program would otherwise cause modifications to the preserved portion of the parent); and

making copy of such targeted data (e.g. step *6* – Fig. 2 – Note: the to-be-modified areas of parent code being duplicated in child is equivalent to making copy of targeted area) and effect the modification of the targeted data (e.g Fig. 2-4).

But Gorshkov does not specify making a copy of the targeted data and modifying the copy of the targeted data to generate a modified copy of the targeted data without modifying the targeted data in the preserved portion of the first software. Gorshkov, however, informs about a time-efficient debug technique to overcome one potential bug issue inherent to simultaneous changes effected by team developer (col. 1, lines 32-47). In a method for extensive code modification and integrating environment with code versioning for accommodating multiple developers or publishers reminiscent to the code modification and concurrent code change feared by Gorshkov, Bowman discloses control of ownership over the target code to change and making copy of the target code in each instance of change per publisher or developer without stopping the ongoing main process (e.g. col. 177, lines 38-58; col. 293, lines 32-56; Fig. 177-178).

Further, the method of code change between processes and uninterrupted change integration such as taught by Bowman is further approached by Khoyi via a method for integrating changes of data between child processes and parent processes analogous to the debugging child/parent paradigm by Gorshkov. Khoyi discloses using of specialized structures to link objects targeted in the modifications schemes and thus making copies of targeted portion or object from thus linked objects so as to effect modification therein (e.g. col. 3, lines 33-44; col. 38, lines 7-22). It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the code patching such as taught by Gorshkov so, whenever resources are available, to implement the technique of creating a copy of the targeted portion and effect the changes therein prior to integration as suggested by Bowman and enhanced by Khoyi, because this would eliminate the shortcomings of having unresolved code references due to concurrent code changes as feared by Bowman and maintain a integrity of the original code for securing roll-outs (e.g. Bowman: col. 177, line 60 to col. 178, line 43) as well as provide session independency while modifying the copy at will (e.g. Khoyi: col. 2, lines 4-17; *remain essentially independent* - col. 3, lines 33 to col. 4, line 42).

As per claim 2, Gorshkov does not disclose publishing the preserved portion of the first program with a symbolic name associated it with the second program; nor does Gorshkov disclose accessing the second program by multiple users via the symbolic name. Gorshkov, however discloses the contention due to multiple users trying to modify code for bugs and the desirability to accomplish such code change in a uninterruptive and more controlled manner (e.g. col. 1, lines 27-47). A desired resolution to synchronizing multiple and simultaneous changes applied to a persistent storage or shared source of data as suggested by Gorshkov is evidenced by

Bowman. Bowman suggests the use of versioning services for check-in/check-out of instance or copies of objects (e.g. Fig. 14; col. 53, lines 58 to col. 54, line 48; *reference this instance* -- col. 286, lines 21-45), hence suggested use of identifier (version number) to reference a preserved code targeted for changes. It would have been obvious for one of ordinary skill in the art at the time the invention was made to provide the users with publishing means which would enable user access to the second program the corresponding preserved portions in the first program, i.e. using the technique suggested by Bowman to link users to the latest representation of the recently updated source data, i.e. version identifier, because this would enable up-to-date data access by users as well as imparting user's independency of tasks without risk of infringing upon someone's else state of task achieved, thereby avoiding memory reference faults through misdirected retrieval/read of obsolete or non-existent or shared data.

As per claim 3, in the combination of Gorshkov/Bowman of claim 1, Bowman does teach a database services (e.g. Fig. 12, 14, 156-161) and this database limitation would have been obvious in view of the combined teachings by Gorshkov and Bowman as mentioned in claim 2. One of ordinary skill in the art at the time the invention was made would be motivated to modify the source code (first program) to upgrade by Gorshkov to make it a database-related program because both Gorshkov and Bowman desire to resolve multiple upgrade to the data source and expediently propagate the changes to provide persistency to the common source while providing fault-free up-to-date data use, using the upgrade technique applied to a copy such as suggested by Bowman; and applying the technique of dynamic creating of replica for expediting modification before committing as such is one typical operation in a database upgrade application.

As per claim 4, Gorshkov does not teach a database system; but this limitation has been addressed in claim 3 above and would have been obvious herein for the same rationale. On the ground that Bowman teaches about a database being updated, Gorshkov further discloses preserving of the memory state of the preserved portion of the first program (e.g. steps 22-24 – Fig. 4; steps 35-37 – Fig. 5 – Note: the context switching applied to child code being a copy of the first program is equivalent to saving state of the first program, and the need to upgrade or patch). This, in conjunction with Bowman, is implicitly teaching that a portion in a database application has failed or requires immediate interruption for consistency resolution.

As per claim 5, Gorshkov does not specified accessing the modified copy of the targeted data upon a subsequent attempt. Official notice is taken that version control software limiting access by a registered user to just the modified copy of a preserved and version-controlled document was a well-known concept in the art at the time the invention was made (e.g. PVCS, Sybase). In view of this well-known concept, this instant limitation would have been obvious by virtue of the combined teachings by Gorshkov, Bowman (e.g. col. 176, line 48 to col. 177, line 58) and Khoyi using the rationale from claims1-2 above because the preserved portion of the targeted data has now been redirected via a symbolic reference (e.g. versioned copy) to the updated portions applied to the copy of such targeted data.

As per claim 6, this limitation would have been obvious by virtue of the combined teachings by Gorshkov, Bowman and Khoyi above because the process of dynamically linking by Gorshkov is thereby further enhanced so as to becoming a dynamic database persisting via replication and the teachings by Bowman would have combined to render the subsequent access by an user limitation obvious as per the same rationale used in claim 2 above.

As per claim 7, Gorshkov discloses dynamic linking and executing of the second software program by a user (e.g. col. 4, lines 29-33; step *12* – Fig. 2; Fig. 4); a first modified copy of the targeted data (e.g. step *6* – Fig. 2). But Gorshkov does not specify the steps of executing an operation that would cause modification, performing such operation by making a second copy and modifying a second copy being separate from a first modified copy; nor does Gorshkov disclose that the first modified copy has been linked and executed by a first user. But by virtue of the combined teachings by Gorshkov, Khoyi, and particularly Bowman, these steps limitations to link to execute the second software, to generate a modified copy by a first user; then repeat the process by creating a modified second copy by another user would have been obvious because of the desired intent by Gorshkov/Bowman/Khoyi as not to allow users to access undesired or obsolete/unallocated areas of the data stored, thus creating for each user an instance (e.g. Bowman: *check-in/out* - re claim 2) which would direct him/her to an instance of claimed/appropriate areas of the latest modified target code; and that the propagation of the data changes should be available to all users as intended by Bowman (re claim 2), with the repeated scenario of informing each user with a reference to the latest portion of data to start the modification with.

As per claim 8, the steps as claimed performed by a third user would have been obvious in view of the rationale used to reject claim 7; hence are rejected herein using the same ground of rejection used in claim 7 above.

As per claim 9, this is the computer medium version of claim 1 above, hence is rejected herein using claim 1 rejection; further using the disclosure by Gorshkov (col. 5, lines 14-23) to address the computer-readable medium.

As per claim 10, this is the computer medium version of claim 2 above, hence is rejected herein using claim 2 rejection.

As per claims 11-12, these claims correspond to claims 3-4, respectively, hence incorporate each the corresponding rejection as set forth therein.

As per claims 13-16, these claims correspond to claims 5-8, respectively, hence incorporate each the corresponding rejection as set forth therein.

As per claim 17, Gorshkov discloses an apparatus for debugging a first software program, such apparatus comprising a memory storing instructions operable for performing the steps of:

preserving (first software program without de-allocating the first);

dynamically linking (second software program);

executing the second program; and

making copy (targeted data) and effecting modifications to the first software

just as recited in claim 1 above.

These steps are rejected herein with the corresponding rejections as set forth therein.

But Gorshkov does not specify making a copy of the targeted data and modifying the copy of the targeted data to generate a modified copy of the targeted data without modifying the targeted data in the preserved portion of the first software. This limitation has been addressed in claim 1 above and is rejected herein with the same rationale as set forth therein using Bowman and Khoyi's combined teachings.

As per claims 18-24, these claims are the apparatus (recited as *computer readable medium*) versions of claims 2-8, respectively; hence are rejected using the corresponding rejections as set forth respectively therein.

Response to Arguments

5. Applicant's arguments filed 09/29/2003 have been fully considered but they are moot in view of new grounds of rejection.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan A Vu whose telephone number is (703)305-7207. The examiner can normally be reached on 8AM-4:30PM/Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki can be reached on (703)305-9662.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9306 (for formal communications intended for entry)

or: (703) 746-8734 (for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington. VA. , 22202. 4th Floor(Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

VAT
November 30, 2003

KAKALI CHAKI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100